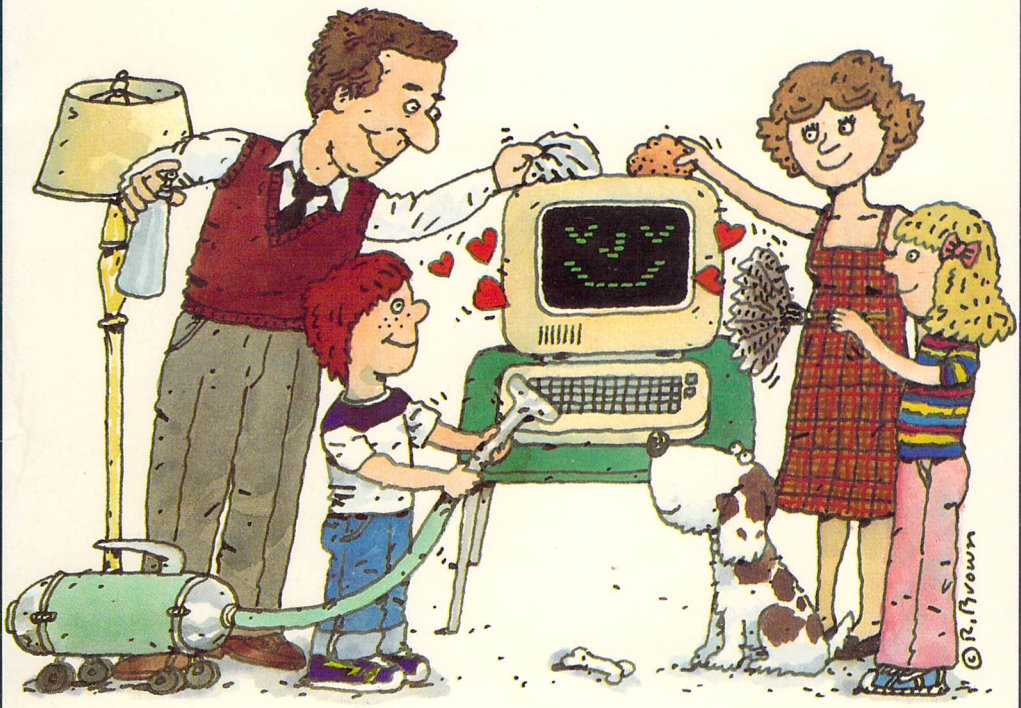
FAMILY COMPUTING

A GUIDE TO COMPUTER CARE



INCLUDES TIPS ON

- SETTING UP YOUR COMPUTER
- DISK CARE
- TROUBLE-SHOOTING
- SHOPPING DO'S AND DON'TS

Plus: Vital hints on housekeeping, emergencies, service contracts, warranties and much, much more.

PUBLISHED BY SCHOLASTIC INC.

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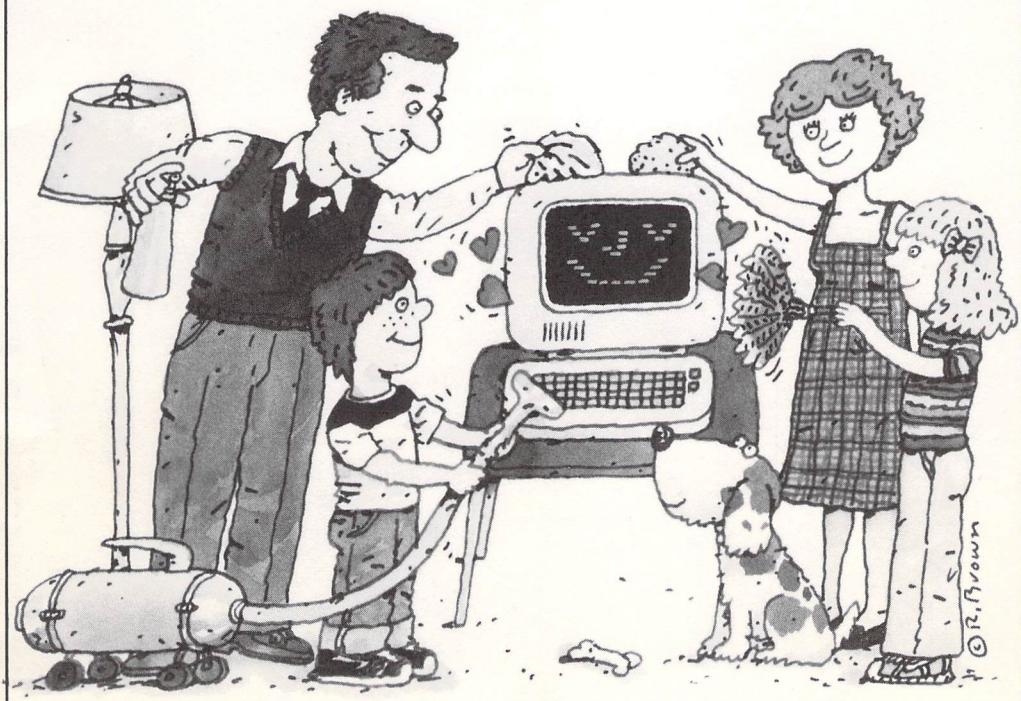

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Introduction

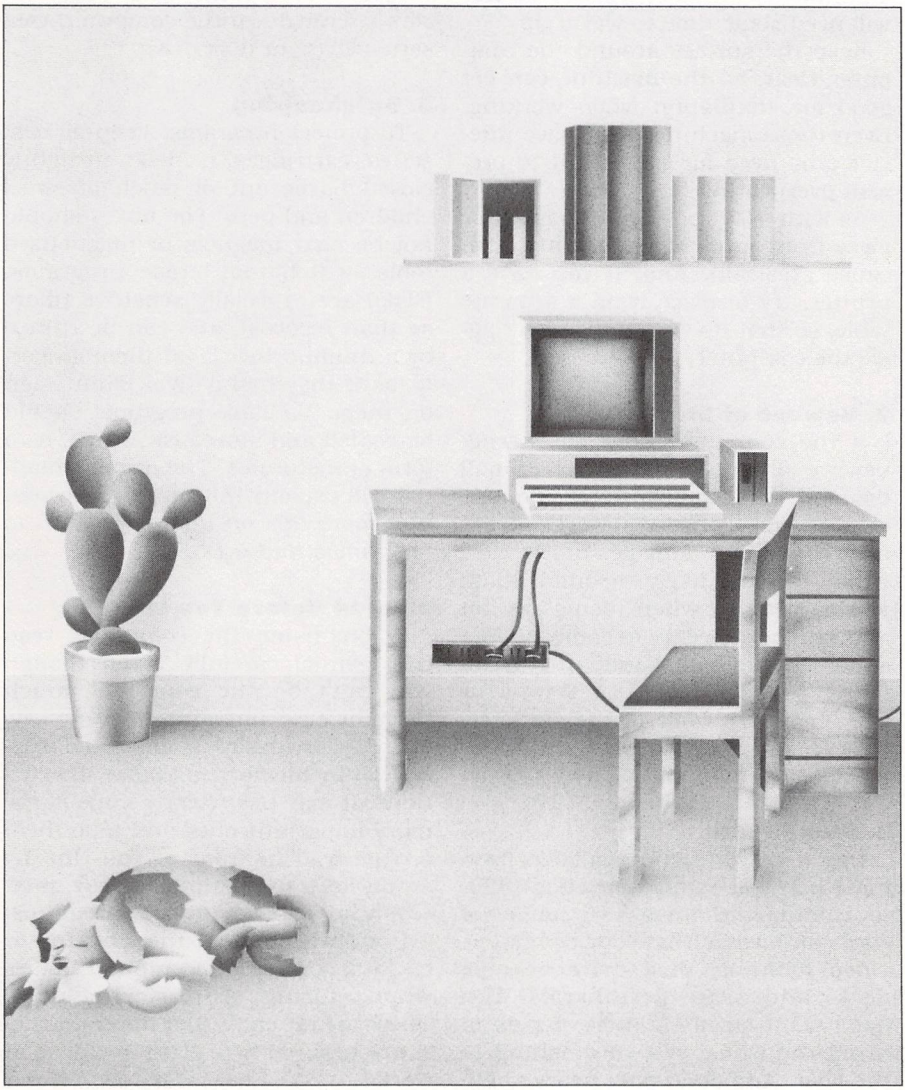
The two biggest hurdles to cross before getting into computing are the very basic steps of learning how to shop for your computer and learning how to care for it. At first, so many of us are afraid that we don't know anything and that we'll do something "wrong" to hurt the machine.

This special guide to computer care addresses both these issues. We've compiled in this single resource some basic shopping do's and don'ts along with a number of FAMILY COMPUTING's most popular articles on computer care and maintenance. We hope to help make your day-to-day computing worry-free and trouble-free.

On an ongoing basis, you'll find additional articles and tips in the pages of FAMILY COMPUTING, to further develop your confidence as a computer user.

The Setting

It takes care to shop for a computer. It takes still more care to set one up properly. Reading the directions thoroughly is important; so is common sense. Today's personal computers may be sturdy machines, designed for many hours of use, but they also can be sensitive and finicky. Following are six steps to get you off and running.



1. Setting Up

When you open the box, check the manufacturer's packing list (or manual) to make sure you have all the parts. If you don't, call the store immediately.

Set the computer in an area that won't get a lot of traffic. Keep in mind that the computer will function best at normal room temperature. In unusually cool or damp rooms, such as an unheated basement, the computer will need some time to warm up.

Keep the surface around the computer clear, so the machine can get good air circulation when working. Even those machines that have interior fans need air movement to prevent overheating.

As with a TV, position the monitor away from sunlight glare, which can cause eyestrain. And, if you have a printer, try to place it on a separate table, so that its vibrations won't jiggle the computer.

2. Beware of Static

If the computer room has a rug, beware of static electricity. Small doses of static can cause the computer to speak gibberish; large doses may cause real damage. Static electricity is most likely to build up in winter months, when rooms are hot and dry, but it's easy to combat—just spray the rug with a mild mixture of fabric softener (such as Downy or Stay-Puf) and water. If the static recurs frequently, you may need a humidifier or static mat.

3. Plugging In

Buy a power strip, available from most hardware stores for about $20, to eliminate the massive tangle of cords and wires from your computer, video monitor, disk drive or tape deck, and other peripherals. You don't want small children or pets to bring the whole system crashing to the floor. And don't plug heavy appliances into the same outlet as the computer. When turned on, they will cause a sudden drop in voltage, which may play havoc with the computer.

4. No Food or Drinks Allowed

Do not eat or drink near the computer and its accessories. Foreign substances, including spills, dust, and smoke, can destroy programs on cassettes and disks—and they will slowly wear down the computer, cassette player, or disk drive.

5. Safekeeping

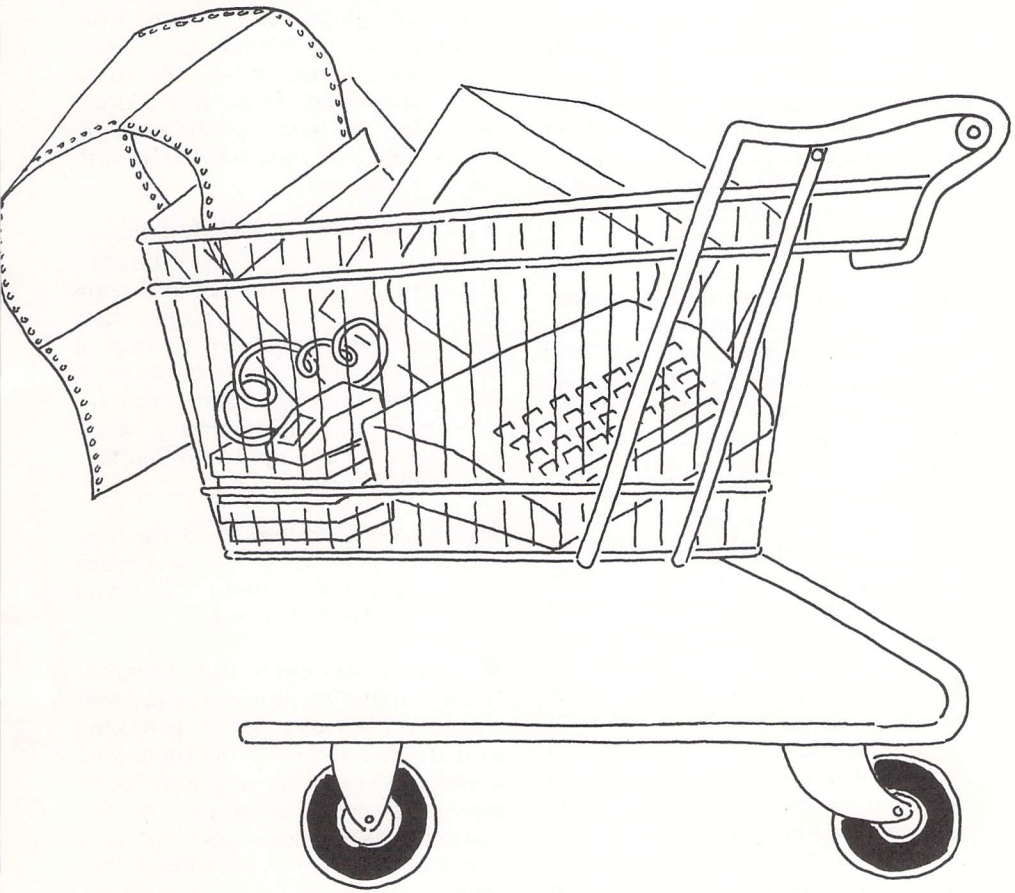
To protect programs, keep all cassettes, cartridges, or disks in tightly closed boxes out of reach of small children and pets. The boxes should not be near magnets or magnetized tools, which may erase programs. Disks are especially sensitive (more so than records), and can be ruined by a thumbprint. Treat them gingerly, as if they had a "Wet Paint" sign on them. Valuable programs should be copied and stored elsewhere, as a form of insurance. The owner's manual will explain the copying process. (*For more tips on disk care, turn to "12 Don'ts and a Do."*)

6. Read Before You Leap

Before using the computer, read the manual carefully. Even though you can't do the computer much harm by experimenting with the keyboard, you will save some initial frustration by memorizing basic instructions. It may pay to copy some of the more important ones and tape them on the wall in front of you. In any event, keep the manual nearby, preferably on a shelf with your programs.

Don't worry about the whirring or clicking sounds the computer makes when storing or retrieving data. These are, after all, just the sounds of a machine with a giant memory at work.

Shopping Do's and Don'ts



Shopping for a computer is unlike any experience most of us have ever had. It's unnerving even to those who previously found shopping a form of recreation. Not only do most of us *feel* dumb and vulnerable when we walk into a computer store for the first several times, the fact is, we *are* ignorant. Most first-time buyers know very little—even about why they want a computer. Few know much about the technology, its applications, or the specific products available. Many salespeople know little more.

A number of specific steps can increase the comfort level in this tension-producing situation. Here are 10 shopping guidelines:

1. Figure out who in the family will use the computer, and for what purposes. When you shop, take along the list of objectives and measure the

computers and the software they run against your list. Take brochures home to read in your favorite chair.

2. Many experts say that after you decide why you want a computer, find out which software best accomplishes the task, and then search for the computers it runs on. Don't start the other way around, they advise. Sometimes shoppers get so caught up with the equipment, they don't pay enough attention to the software. The greatest computer in the world is not much use without the software you want.

3. Ask plenty of questions. Ask the same questions of different people. Then ask more questions. Don't be afraid of appearing "stupid," because there's no reason you should know anything about computers. Make sure you get answers you understand. Don't be intimidated by jargon; the person using it may not know much more than you do. To meet people who are using the computers you are considering, attend a local users' group meeting.

4. Be sure you know what you're getting for the money. You need more than just the keyboard unit, which is what most advertising refers to. You also need a cassette recorder or disk drive to run and save programs, and a monitor or TV to see what's going on. And, if you want copies of your work, you'll need a printer. Many of these add-ons cost more than the keyboard unit itself. If you're buying peripherals, ask what you'll need to hook them up and get them working. There are lots of extra costs, and not all salespeople volunteer this information.

5. Demand a demonstration, and try out any computer you're thinking of buying. Finding a comfortable keyboard is important—pretend you're testing a new car.

6. Read magazines to see where the industry—and any computer you're considering—is heading. You want to make sure you'll have an array of software and equipment to choose from in the future. In this regard, be wary of promises made by manufacturers or retailers about forthcoming products. They can take months to materialize, and the promises often vanish into thin air.

7. Discounts are great, but there's no such thing as a "free lunch." Though you pay more when buying from a certified dealer, you generally get better service. If you're buying from a department store or through mail order, find out where you have to take or send the computer for repair. Sending a computer to Timbuktu is no bargain.

8. Don't rush things. Take the time to comparison shop. As you learn more, your ideas about what you want probably will change.

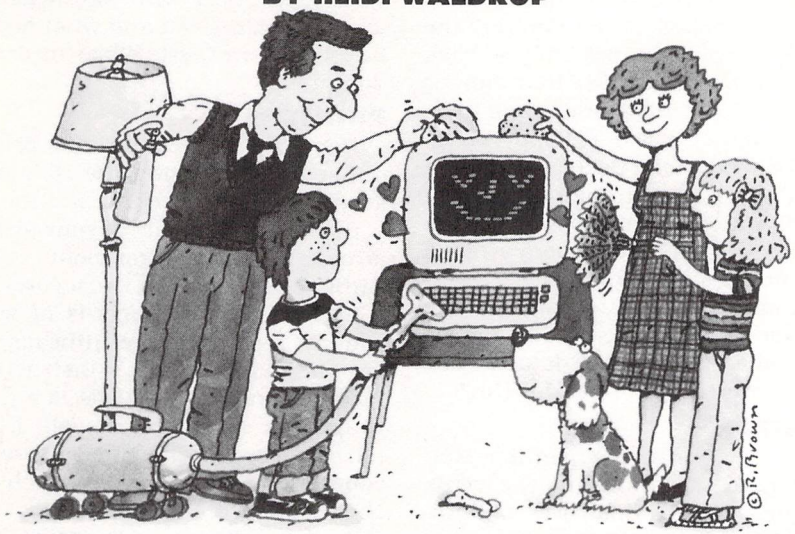
9. One addendum to the last point: Don't wait for a state-of-the-art machine, unless you prefer twiddling your thumbs to exercising them on a keyboard. There are any number of reasonably priced computers on the market that will keep you and your family entertained and challenged for years.

10. If you're having trouble finding a computer that satisfies the needs of everyone in your family, consider this option: Buy a low-end start-up computer for the children (or put their allowances toward it) and another, more-sophisticated computer that suits you. This is better, and not much more expensive, than buying a "compromise" computer that satisfies no one.

Computer Care

COMMON SENSE IS THE BEST PRESCRIPTION

BY HEIDI WALDROP



Care of a computer is similar to that of a stereo system. Basically, a computer has electronic and mechanical parts. The electronic parts should be replaced when they blow out, and the mechanical parts need to be kept clean to function properly.

Each part of your computer requires special care. The following list offers basic guidelines and helpful hints to keep it running smoothly. An accompanying article, "A Master Plan for a Healthy Computer," offers suggestions for computer-maintenance routines.

DISK DRIVE

Because it has the greatest number of mechanical parts, the disk drive usually is the trouble spot. Following a few simple steps will help you avoid most problems. The biggest enemies are dust and dirt, so invest in a dust-cover for protection, and clean the disk-drive heads at least once a year. You can do this with a head-cleaning disk (though their value has yet to be proven) or by taking the disk drive to your local dealer.

New or overeager computer owners sometimes clean the disk-drive heads too often—don't! This is not a case when more is better. Cleaning more often than the instructions recommend can wear down the delicate heads. Be sure to read the manual carefully, and don't overdo it.

To prevent dust buildup, you probably should keep the disk-drive door closed, although on some double-headed machines, this puts undue pressure on the disk-drive heads. Ask your dealer what's best for your computer.

DISKS

Taking care of disks is simple. In general, the same rules apply as for record albums. Disks need to be kept in their jackets and away from dust, extreme heat, and cold. Disks should be stacked vertically, but not too tightly together, and kept away from magnetic fields, such as your moni-

tor. Never bend the disks, or touch their surface. When writing on the label, always use a felt-tip pen. Anything hard like a ballpoint pen may damage the disk.

One preventive technique that is often overlooked is reinforcing the center hole on your disks. If your disk didn't come reinforced, that can be accomplished with a simple and inexpensive device called a "floppy saver" kit (about $15 for a dozen rings). The floppy saver is a strengthening ring that fits around the hole of a disk, similar to the reinforcement rings a student uses on paper for a three-ring binder. It's best to attach a floppy saver before you use a disk for the first time. (*For more details, see "Disk Care: 12 Don'ts and a Do."*)

MONITOR

The only parts of a monitor that really need attention are the vents and the screen. A dustcover will protect it from the environment, but you also may want to use the hose attachment on your vacuum cleaner to clean the vents occasionally.

The screen can be cleaned with any glass cleaner or antistatic spray and a lint-free cloth. Antistatic sprays, which provide added protection from static—and clean well, too—are available at most computer stores.

KEYBOARD/CENTRAL PROCESSING UNIT

Cleaning the contacts inside your computer is something you shouldn't do too frequently, but you might try it when a program isn't working. Sometimes it's simply a matter of oxidation, dirt, or corrosion buildup that breaks the electrical current. If you are able to open your computer (such as with most Apples), it's easy to reach inside and clean the contacts with an eraser. (Be sure not to leave bits of eraser inside.)

There are also multipurpose cleaning kits, available for about $6, that include a special fluid, sponge-tip applicators, and lint-free towels. Some people feel more confident using a kit, but rubbing alcohol and tightly wrapped Q-tips can do the trick. CAUTION: Check with your dealer on what you can clean and what should be left to an expert. When in doubt, don't touch.

PRINTER

The only upkeep on the printer (other than changing the ribbon) is keeping the rollers clean and the paper running smoothly. If your printer is open to the environment, it will gather dust faster, so use a cover.

Be sure to keep records of when you last replaced the printheads; follow the manufacturer's instructions to determine whether this is a do-it-yourself or a repair-shop job. If you have a daisy-wheel printer, the wheel can be cleaned with a kit much like those used for typewriters. You should be able to find one at your local computer store.

CABLES

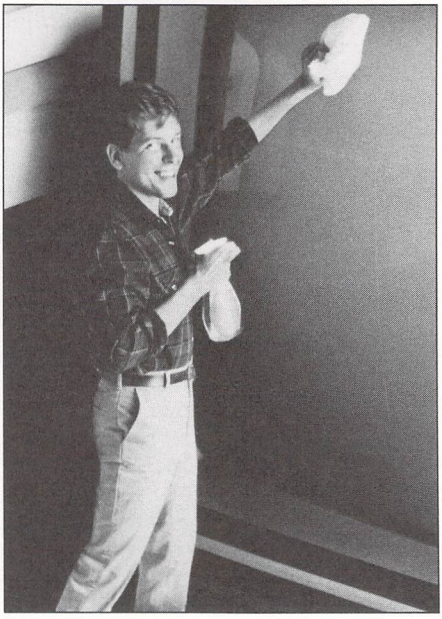
The first thing to do with cables is to make a diagram of what is plugged in where, and why. It can save a lot of headaches when the cables are accidentally pulled out or the computer is moved.

To child- and pet-proof the cables that run along the wall or floor, gather them with rubber bands or cover them with electrician's tape (available at any hardware store). Avoid running cables along the floor, where they can catch someone's foot or be stepped on.

As a rule, good preventive techniques will help you avoid a variety of problems. Be sure to set up strict rules for home use of the computer and clear responsibilities for each member of the family. And, if there's a problem, consult the chart, "Troubleshooting Tips." If you still can't get the computer running properly, call your dealer or repair shop.

A Master Plan for a Healthy Computer

BY JACQUELINE AUSTIN



I Start with a Checklist

If you arrange a sensible setup and establish a workable routine, you'll eliminate plenty of potential problems!

AT SET UP:

1. Send in your warranty card. Many companies tell their customers about glitches that are later discovered in the equipment. If you don't register as an owner, the company will never know how to contact you.

2. Store the original packaging. You'll need that carton when it's time to carry or mail in the computer for repair.

3. Read your manual carefully. Most manuals say little about maintenance, so many people tend to ignore them, but if you follow their advice at setup, you'll avoid a lot of problems.

4. If the manual isn't clear, call the manufacturer for advice.

5. Be careful where you place your computer. If you put the disk drive too close to the monitor, you may get disk input-output errors; if the computer's too close to your TV, it might cause interference.

6. Some experts recommend "burning in" your computer—turning it on and leaving it on for 48 hours. This uses very little electricity, and may catch defects.

B IN THE FIRST WEEK OR TWO:

1. Join a users' group. Experienced users often know the ins and outs of a computer even better than the manufacturer!

2. Buy or make lint-free dustcovers. (Old sheets are fine.)

3. Invest in antistatic mats or, at the very least, antistatic cleaning spray or fluid; use regularly.

4. When lightning strikes, your computer can become a very expensive paperweight. Buy a surge protector as a safeguard against sudden bursts of voltage. The cost ranges from $10 to $100. Look for such features as response speed, capacity, and the ability to handle repeated sharp stresses.

5. Consider buying or building a cooling fan to help prevent overheating.

6. Start a journal/file to jot down symptoms, phone numbers, dates, actions, and names of helpful (or unhelpful) service personnel. This might seem premature, but if you've bought a lemon, you'll need incontrovertible evidence!

C BEFORE YOUR WARRANTY EXPIRES:

1. Check each piece of equipment to see that it can do everything it should be able to do. Program a long, repetitive job, and print it out. Leave the computer on for a day or two. Your monitor is relatively easy to check: Fill a screen with M's. How's the focus? The resolution? Are the horizontal and vertical lines of M's straight?

2. Get a general repair guide. (Henry Beechhold's *The Plain English Repair and Maintenance Guide for Home Computers*, published by Simon & Schuster, is an excellent choice—it even includes a coupon for free advice on a repair.)

3. Use your computer heavily during the warranty period.

4. If anything seems odd—or if you have any questions—take the computer to your dealer for a checkup at least a month before your warranty expires.

5. Don't ever leave the same "screen" of type sitting on your monitor for an extended period of time; it may become permanently "etched" in the screen. (Also, if you're using a computer intermittently, but often, throughout the day, spare its electrical system by leaving the computer on throughout. This puts less of a strain on the system than turning it off and on each time. But do turn the brightness control of your monitor down as low as it will go, except when you're reading a screen.)

6. Consider a service contract if you intend to use the computer heavily after the warranty expires. (*For information, see accompanying article, "Shopping for a Service Contract."*)

7. Find a competent repairperson. That way, when your computer breaks, you won't have to entrust it to a stranger. One of the best ways to find someone is to get a referral from your local users' group. You might also get a referral from your manufacturer through its customer-service network.

2 Have a Housekeeping Routine

This list of suggestions is somewhere between hurried tidying and spit-and-polish shining. Adjust the routine if it doesn't suit you. The im-

portant point is to have *some* routine.

A EVERY FEW USES/ ONCE A WEEK:

1. Clean keyboard with a can of compressed air, or, if your vacuum cleaner has a small, soft brush attachment, vacuum the keyboard.

2. Vacuum computer area.

3. Wipe monitor screen with an antistatic or glass cleaner.

4. Wipe cabinets and casings.

5. If you have no antistatic mat under your computer, wipe the floor with the cloth you used to wipe off the monitor, or use a special antistatic spray.

6. Vacuum all openings in the computer's shell: ports, cable outlets, seams in casing, exterior of disk drives, back panel, etc.

B EVERY MONTH OR TWO:

1. Shine a light on the ink-catching surfaces of your printer. If they are dirty, clean carefully with whatever cleaner your dealer recommends. (Often, the best cleaner is rubbing alcohol.) Vacuum and clean areas around the ribbon and platen, daisy wheels, and any mechanical parts. *Important*: Before cleaning with any liquid, turn off and unplug computer, and always check before cleaning to see if part is lubricated! Relubricate after cleaning.

2. Clean your dustcovers.

3. Inspect ports, disk drive(s), and printer for signs of dirt and wear.

C EVERY SIX MONTHS:

1. If your dealer recommends it, clean disk-drive heads with a cleaning disk. Or, use one of the cleaning routines outlined in Beechholds' guidebook. *Warning*: There is a good deal of controversy about the wisdom of maintaining a disk drive yourself. Some users swear by using disk-cleaning kits, saying they're convenient and do a great job of preventing debris from building up inside the drive. Others say such kits are expensive and can damage the heads if used too frequently.

2. Clean line connectors—plugs and sockets—with alcohol.

3 Set Up an Emergency First-Aid Plan

If a problem arises, don't panic! It's probably not as serious as it first appears.

A IN YOUR FIRST MOMENTS OF SHOCK AND HORROR:

1. Turn off the computer and give it—and you—a rest for awhile. It's possible that both of you are overheated and that the problem will self-correct in a few hours.

2. Take a look at the chart, "Troubleshooting Tips." Anything sound familiar?

3. Inspect the plugs, pins, and electric connections/fuses. Heathkit, the manufacturer of customer-assembled computers, estimates that 85 percent of all problems are caused by bad soldering connections.

4. Inspect the screws and mechanical connections.

B WHEN YOU HAVE YOUR SECOND THOUGHTS:

1. Call the customer-service number and ask technicians to help you isolate the trouble.

2. Run a diagnostic disk; it often can give you a good idea of where the problem is located.

3. Call your users' group and repairperson for advice.

4. You often can isolate the prob-

lem by swapping peripherals, circuit cards, cables, etc. with another user. For example, if a friend's disk drive works perfectly well with your computer, but the problem still exists when you hook up *your* disk drive, chances are it's the drive, or maybe a connection—not the computer.

5. There are ways to save a tape or disk you think has been erased or damaged. So, if the ultimate disaster has happened, make a few telephone calls before throwing away that cherished piece of software!

WHEN YOU'RE READY TO ACT:

1. Open the computer (don't do this if your warranty's still good, unless you own an Apple II plus or IIe or know *exactly* what you're doing!). Use a can of compressed air to blow away any dirt from the interior. Check the soldering for weak connections.

2. If you're stumped, and ready to go for outside help, pack the computer carefully in its original shopping material. Do this whether you're carrying or mailing it in for repair. Remember, malfunctions caused by customer negligence are not covered under warranty. Check with your manufacturer about freight charges, shipping, and estimated time for repair.

3. Don't let the computer out of your hands until you know exactly what the repair process will entail. If you can, get a written estimate, both for cost and time. Make sure to double-check the address before mailing off your precious cargo. (And if you're fond of your equipment, maybe you should insure it before shipping it.)

4. If the repair process is going to be lengthy, or if the necessary replacement parts are out of stock, ask the repairperson to lend you another computer.

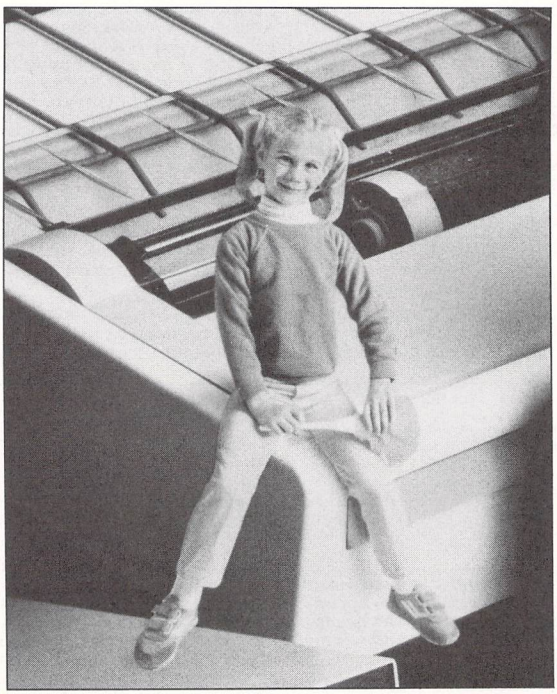
Troubleshooting Tips

Although it is a good idea to develop an ongoing relationship with someone in your neighborhood who can fix your computer or advise you about repair problems, you won't want to place hysterical phone calls every time something appears to go wrong. The following chart includes some problems that dealers around the country cite as the most common. There are many things computer owners can do on their own, but the experts stress that you should never attempt anything that makes you nervous. The biggest danger in computer care is when the inexperienced person reaches his or her hands inside the machine.

PROBLEM	PROBABLE CAUSE	CURE
The image on the screen blinks on and off intermittently.	Defective cable or receptacle.	Watch the effect on the screen as you move the cable back and forth to see if it is a problem with the cable. You can check the specific cable by replacing it with a working one borrowed from a friend. If your cable is defective, it will need to be replaced. If moving the cable has no effect on the screen, it is most likely a receptacle problem and you will need to take the computer in.
The screen shimmers, blanks, then comes back on . . . you've lost what you are working on. Or the image on the screen grows very faint.	Static, a surge of voltage through the cables, or a "brown-out."	The best cure for this problem is prevention by both putting the computer in a static-free environment, and using a voltage-surge protector and an Uninterrupted Power Supply unit.
Programs won't load properly.	Something in the disk drive: dirt, corrosion, or the dog's bone.	If there isn't a bone, think about the last time you cleaned the disk-drive heads . . . then do it.
Something is spilled on the keyboard or the casing is cracked.	Someone wasn't following the house rules.	Don't try to clean it. Just unplug the computer and take the keyboard in to your dealer.
The cord has been chewed.	The dog.	Unplug the computer, then detach the damaged section of cord and take it in for replacement.
Strange lines, letters, or symbols appear on screen.	Most likely the ROM or RAM chips.	If your computer has removable cards, replace them with a friend's cards to see if yours are defective. It also could be that heat has caused the ROM and RAM chips to expand and become loose. All you need to do is open the computer and press down on the chips for a good contact. (CAUTION: Opening some computers voids the warranty.)
The disk drive doesn't sound right. Or "read" errors appear on the screen, e.g., ERROR ON DRIVE B. Or a program won't run.	Disk-drive alignment or revolution speed is off. Or the heads are dirty and worn.	It's normal for a disk drive to run at about 288 revolutions per minute—plus or minus four. If the speed is off, especially if it's too slow, you will get these symptoms. It happens most often when you have used someone else's disk drive to copy a program. You might be able to avoid a trip to the repair shop with the help of a speed-adjustment disk, available for less than $20. It's a good idea to have a program like this on hand for such occasions. Check your local users' group for a good program for your computer—there may be a no-cost one in the public domain, as with the Atari. If you have cleaned the heads (as you should do every two months) and adjusted the revolutions, and you still have problems, most likely you have alignment problems and need to take the disk drive in for repair.
The computer simply won't work!	It could be something special . . . follow your checklist.	1) Are the cables all plugged in according to your chart? 2) Is the disk in correctly? Not backwards or upside down? 3) Are you sure the disk has information on it?

A Guide to Your Computer's Special Service Needs

BY JACQUELINE AUSTIN



Some general guidelines for computer care and maintenance apply to all different types of machines. Yet, every system has its special features, and each computer manufacturer has its own policies for care and repair. The following guide will help direct you to some of the specific information you'll need for your brand of computer.

ADAM

Take extra care with disks and data packs if you have an ADAM. Don't leave software on top of the printer, because it emits strong magnetic fields that can harm your programs. In fact, don't put the monitor on top of the rest of the unit; it wasn't built to take the pressure and won't be shielded from the magnetic field. Be

sure to remove data packs from the drive after use—and never turn the machine on or off with a data pack in the drive! Coleco says many people have ruined their data packs by doing that—but also says that some data packs that aren't working properly are easy to fix. According to the manufacturer, customers should take a troublesome data pack out of its case and tap it a couple of times on each side against a hard surface, such as a tabletop.

Since January 1984, Honeywell has been servicing the ADAM. Forty centers opened during the year and there are more to follow; each has state-of-the-art equipment and highly trained personnel. (Call your local branch of Honeywell for information.) At ADAM's toll-free number, you'll reach technicians who can help you isolate any problems with your system. For further help, consult *Adam's Companion*, by Ramsey J. Benson and Jack B. Rochester, published by Avon Books.

APPLE

Apples tend to be reliable, and the AppleCare service contract and policies are some of the most complete in the business. Authorized dealers—there are about 2,000—keep a complete parts kit on the shelves; they are specially trained by the company in a stringent repair procedure. Apple claims that 60 to 80 percent of all carry-in repairs are completed within 24 hours. The dealers can insert a new part and send the old, malfunctioning part to a huge center in Dallas for reconditioning.

Most complaints are about electromechanical components. And, the company's policy of refusing to sell parts or service manuals directly to its customers is oppressive and inconvenient. If you have an Apple, get to know your authorized repairperson. And, call an Apple End-User Technical Support number if there's any extended problem with or delay in service—Apple says it wants to know.

ATARI

This corporation has undergone tremendous changes since its takeover by former Commodore chief Jack Tramiel. The problems that plagued Atari before and during the ownership transition—including poor computer repair service—are rapidly diminishing. Most notably, Atari is beefing up support and information for its 1,500 service centers.

If your malfunctioning computer and peripherals are under the 90-day warranty, you can exchange them at the place of purchase. After that, most repairs will be handled at local Atari service centers. You can find the one nearest you by calling the customer-service number: (408) 745-4851. Repairs that can't be handled by the local center can go to Atari's main factory in California: 390 Caribbean Drive, Sunnyvale, CA 94089.

COMMODORE 64

C 64s and Commodore disk drives originally had a high defect rate; this has now improved. The company has one of the largest and best support systems in the business, including a link-up to CompuServe, which lists user questions, dealers, technical tips, etc. Many local Commodore dealers offer reasonably priced service contracts.

Owners of malfunctioning machines should send the computer to Commodore along with a service fee and a letter describing the problem. The company will either replace or repair parts.

IBM

IBM says it doesn't want to know about your system (in general) if it contains anything of non-IBM manufacture. On IBM products, however,

the corporation offers extremely complete, yet pricey, warranty options or annual maintenance agreements. Call (800) IBM-2468 for info.

A diagnostic disk comes with the computer. IBM also sells exquisite (and expensive) dustcovers, cleaning disks, sprays, and antistatic cleaners—almost everything the user could desire.

If your system mixes IBM and non-IBM parts, you'll have to do some comparative shopping for service. Try IBM Product Centers, Sears, or Computerland, as well as third-party vendors. Prices and terms vary, so keep checking. For example, Sears will service only those parts you bought at that specific store. Computerland will do repairs on all parts of your IBM system, whether or not the part was purchased there. It'll do it at the store or come to you.

TANDY/RADIO SHACK

With almost 9,000 outlets worldwide, Tandy/Radio Shack should offer good, prompt service. User re-

ports, of course, vary: Some say they got excellent, swift repairs, while others had to go back to the store again and again. Troubleshooting is handled on the level of individual electronic parts, as opposed to isolating and replacing the entire computer, peripheral, or section of a system. This is a policy that sometimes takes longer than you may like—but if you have no service contract (and many Radio Shack users don't), replacing one component can be cheaper than replacing a piece of the system.

Service contracts are offered for the whole Tandy line. You have a choice of two types: a carry-in contract and a full on-site contract, which includes visits from repair personnel to your home or office. In fact, even if you don't have a service contract, you can arrange to have a Tandy repairperson come to you.

TI-99/4A

At first, users complained about defects in the electrical system; later, there was a range of new complaints. The TI-99/4A system was discontinued and the inventory was sold to Triton Products.

To the manufacturer's credit, it still maintains a viable hot line and repair network to help serve the two million TI-99/4As out there. Call customer service to get help from one of the 35 or 40 operators. If they can't answer all your questions, you can get friendly, competent advice from one of the five technicians Texas Instruments keeps on the job.

If the problem isn't simple, the technician will refer you to the Customer Service Center closest to you. For a minimal fee you can get a reconditioned TI-99/4A with a six-month limited warranty. If your computer is under warranty, you can bring it to one of nearly 50 service centers nationwide, or you can mail it to the main facility: P.O. Box 53, Lubbock, TX 79408. You'll be charged for service, and you will have to pay for shipping. (You always do, whatever computer brand you own.)

TIMEX/SINCLAIR

Although this company is out of the computer business, it still services its products and honors its warranties. Unfortunately, there is only one customer service/repair center in the country, in Little Rock, Arkansas, which also fields technical questions. You need to do your best to figure out what the problem is before you call the service center. As soon as they determine that the problem is the machine, not the user, you can send them your computer. Then they send you an estimate and if you decide it's worth the money, you send a check and they fix your computer. Once they receive your payment, it usually takes about a week for Timex to send your computer back (via UPS).

Under the circumstances, it may be worth the effort to try to repair your computer on your own. For a few dollars you can get schematics for all three models: the 1000, 1500, and 2068. From there on, however, the going gets rough: There is no technical manual for the 1000; the 350-page manual for the 2068 costs about $25; no parts are available; and no information is offered on the printer. Our advice? Talk to your repairperson about obtaining replacement parts, buy a general repair guide, join a users' group, and keep the computer spotless.

Shopping for a Service Contract

BY JACQUELINE AUSTIN

If you, or anyone in your family, are serious about computing, you should consider getting a service contract. With one of these useful agreements, you can have a broken computer up and running before any resident hackers develop glazed eyes and twitchy fingers.

You can get a contract through your computer dealer, an independent service center, or a third-party maintenance firm. Third-party maintenance can cost a bundle, but you usually get lightning-quick service calls (a two- to four-hour repair is average)—a plus if you're working on an important job. Dealer service is less expensive, but you usually have to carry the computer into the store. Service through an independent shop might be your best choice if the local authorized repairperson is 100 miles away, while an electronics whiz is in the very next town.

Both Apple and IBM have standard contracts that set a flat rate per piece of equipment covered (IBM's prices vary widely, so shop around). Tandy/Radio Shack offers a full range of contracts, and charges 12 percent of the purchase price per year for carry-ins; 20 percent for on-site repair. An extra charge is tacked on if the technician has to travel more than 50 miles to your home or office.

Many discount stores both sell and service computers, so be sure to ask what arrangements can be made. And, if you're shopping for a computer, consider signing the contract at the same time—you may get a better deal.

Before you sign a service contract, read it carefully! The details should suit you—and what you and your computer need. Here are some of the things to look for:

TERM OF AGREEMENT: The dates service is in effect.

CHARGES: A charge of 12 to 20 percent of the purchase price per year, like Radio Shack's policy, is considered fair.

TIME OF RESPONSE: Likely to be a day or less.

SHIPPING CHARGES: Usually you have to ship the computer prepaid, in its original packaging, at your expense. The service company should pay for shipping the computer back to you.

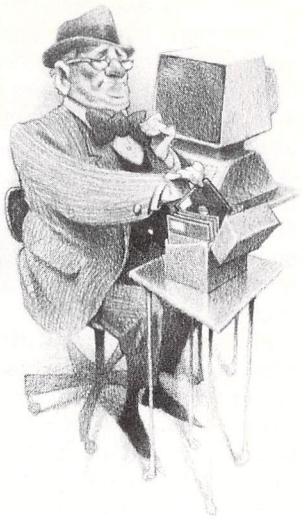
SCOPE OF SERVICE/EXCLUSIONS: Make sure you know which repairs the contract covers!

TIME AND MATERIALS SERVICE: If the repair isn't covered by ordinary service, how much will you be charged for labor? Will the service company give you parts at its cost, or is it entitled to tack on an extra charge for handling?

EMERGENCIES/LOANERS: If your computer crashes in the middle of a very urgent piece of business, will the service company lend you another computer? Will it allow you to come to one of its stores and use equipment there? If the repair takes longer than specified, or you have to wait for a part, will the company replace your computer during the delay?

Remember: Most contracts are negotiable. You don't have to accept the printed contract *carte blanche*; you may wish to add or delete sections to fit your needs. Ask a lot of questions, and be sure to get everything you need in writing.

Disk Care: 12 Don'ts and a Do



BY FOLLOWING THESE RULES, YOU AND YOUR FLOPPY DISKS CAN KEEP RUNNING SMOOTHLY TOGETHER

BY MARTHA GORE

Not long after the David Brown family brought home its new computer system, disaster struck.

In the first week, the Browns had learned to create data files. They'd filled half a dozen disks with their Christmas card mailing lists, telephone directories, medical and automotive expenses, mortgage payment records, and other essential information. With great satisfaction, they watched the information appear on the monitor when it was called up by its file name.

Then came the shock. When the computer was asked for a laboriously created telephone number file . . . the screen remained blank.

With trembling hands, they began to put other disks in the drive. Each one responded properly. What, the Browns wanted to know, had happened to the disk with the phone numbers? And how could they keep it from happening to their other files?

SOME BACKGROUND INFORMATION

A floppy disk looks a bit like a 45 rpm record, and acts a little like a cassette tape. But it's very different from both.

The disk itself is a round platter with a very sensitive, very thin metallic coating on which information can be stored magnetically, one bit at a time. A cassette tape does this also. But, unlike a cassette, a disk can cough up information from anywhere

on its surface almost immediately, without passing through everything in between. Disks also pack in data much tighter than do cassettes. For these two reasons, disks are a faster and more efficient way of storing information. But densely packed data is especially susceptible to disruption, even by particles as small as 1/50,000 of an inch. This is why floppy factories are kept much cleaner than hospitals, and why you should treat your disks with respect.

Each floppy comes with two protective envelopes or jackets. The outer jacket is removed before the disk is inserted in the drive. The inner jacket remains on the disk at all times. The magnetic disk rotates inside this jacket when it's in use. A low-friction lining inside the jacket helps keep the disk clean by trapping most contaminants.

A damaged disk usually has had crucial information changed, erased, or covered by some foreign substance. If you're listening to a tape, and there's a note missing, you'll be able to make out the rest of the music anyway. A computer cannot do this. One bit missing from the wrong place in your word-processing program can render it unusable. Damage to a disk's directory—the map that tells the computer where each block of information is located on the disk—can keep the computer from finding anything at all.

Sometimes a disk will be warped, making it run unevenly in the disk drive. In such a case, even though data is physically present, it won't be read properly.

Even many inexpensive disks are certified to operate properly for at least 3.5 million "passes," or revolutions. That's about nine days of constant head contact, which is more than you're likely to use many disks. Some disk companies advertise that they meet higher standards set by ANSI, the American National Standards Institute. You can even buy a so-called "intelligent" disk that will tell you if it's been exposed to high temperature or excess humidity. You may consider buying more expensive disks for daily use, and cheaper ones as backups. But whatever disk you buy, it won't be guaranteed to keep its memory unless you are willing to protect it.

Here's how. These rules, 12 DONT's and one DO, are almost guaranteed to keep you and your disks spinning along beautifully.

1 DON'T FOLD, SPINDLE, MUTILATE, OR TOUCH THE MAGNETIC SURFACE OF A DISK.

When taking a disk out of its storage box, handle it carefully. Remember, bending can cause permanent damage. Take the disk from its box by an upper corner; don't touch even the outer surface of the disk any more than necessary. Keep your fingers off the shiny parts of the disk that show through the inner lining. Fingerprints are a definite no-no, no matter how clean you keep your hands. The natural body oil on your hands can cause contamination. After you are through using the disk, *immediately* put it back into the outer protective jacket and then into the storage container.

2 DON'T EXPOSE YOUR DISKS TO EXTREME TEMPERATURES.

Extreme heat or cold can cause a disk to lose its memory. Avoid direct sunlight and never leave disks in a closed car. Disk manufacturers recommend a temperature range of 50 to 120 degrees Fahrenheit. A common way to damage a disk is to leave it in a closed car. Ten- to 80-percent humidity is considered safe. If a disk seems to have been damaged by heat, wait 24 hours before trying to use it. Sometimes, it will work again.

3 DON'T ALLOW DUST OR OTHER FINE PARTICLES TO CONTAMINATE DISKS.

House dust can be much larger than the particles that make up a disk's coating. Dust probably is the greatest culprit of all when it comes to destroying disk files. Not only can dust damage a disk, it can accumulate and damage a disk drive. Keep your disks in a closed container. Some head-cleaning disks claim to control dust and grime in your disk drive, but be wary of overusing them. Head cleaners themselves can be abrasive. You should have your disk-drive heads cleaned and maintained annually by a dealer.

4 DON'T SMOKE, EAT, OR DRINK AROUND DISKS.

Smoke is a villain. If you *must* smoke near your computer, try to use a special ashtray that draws smoke into it. Yet even that won't eliminate loose cigarette ash.

Spilled drinks kill disks (though there have been some miraculous exceptions). Beverages are no good for keyboards, either. Put up a "No Drinking" sign and ban all snacking from the area that holds your computer setup.

Chemical fumes also can affect the magnetic coating on a disk. Nail polish, cleaning agents, and glues are just a few products that can create vapors and should be kept away.

5 DON'T WRITE ON YOUR DISKS WITH PENCIL OR BALLPOINT PEN.

To label your disk, write on the self-stick label *before* placing it on the disk. If you must write on the label after it has been placed on the disk, always use a soft-tipped pen. *Never* use a pencil or ballpoint pen; they can cause indentations far larger than the data you need to keep intact.

When you write, make sure the palm of your hand is not pressing on the disk jacket; the compression can damage the disk's magnetic surface. And don't use an eraser on a label; those minute rubber particles also can destroy your data.

6 DON'T LEAVE YOUR DISKS NEAR A PHONE, TV, OR ANY OTHER SOURCE OF MAGNETISM.

Since the disk's memory is created by an arrangement of tiny magnetic particles, your disks must be protected from anything in the environment that may contain a magnetic field. Electromagnetic dangers come in all shapes and sizes. Avoid allowing the disk to come in contact with telephones or television sets. Anything driven by an electric motor, including fans, typewriters, and air conditioners, can be a potential problem. Even paper clips, screwdrivers, car keys, and other metallic objects can become magnetized enough to alter a disk.

A good rule: If it's made of metal, keep it a safe distance from your disks. Plastic disk-storage boxes, which cannot become magnetized, will eliminate some danger, especially if you must store your disks in a metal file cabinet.

7 DON'T EXPOSE DISKS TO STATIC ELECTRICITY.

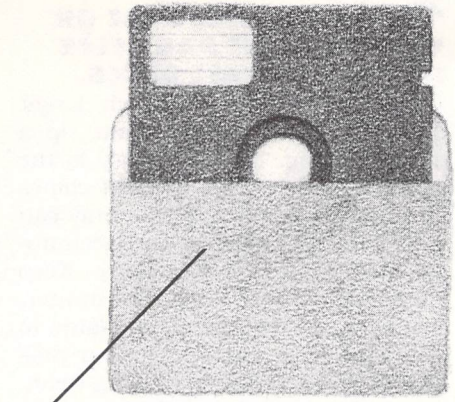
On an especially dry day, merely pointing a finger at your computer may create a spark. If sparks sometimes occur when you walk across the rug, there's a good chance they also can wipe out data and upset the functioning of your computer itself. Consider buying an antistatic spray, or an antistatic mat to place under your computer.

8 DON'T CROWD YOUR DISKS.

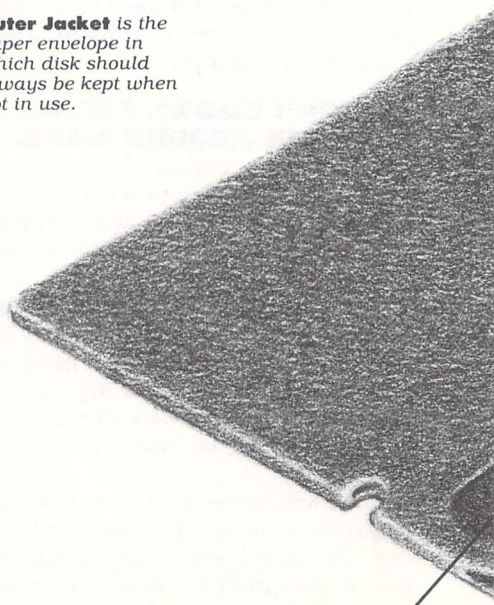
Don't ever stack piles of disks horizontally. And don't crowd disks, ei-

ther vertically or horizontally. They can't take the pressure. Stacking can cause specks of dust to scratch their surfaces. It also can cause them to spin unevenly in the drive, making for unreliable data retrieval. In the words of one floppy-disk promotional booklet, never trust data that wobbles.

Never put a heavy object on top of a disk. For the same reason, never paper clip a disk to anything. No rubber bands. And, for heaven's sake, no thumbtacks.



Outer Jacket *is the paper envelope in which disk should always be kept when not in use.*



Read-Write Window *is where the disk drive's head reads the data. Especially susceptible to damage. Don't touch!*

9 DON'T INSERT OR REMOVE DISKS FROM YOUR DRIVE WHILE THEY'RE SPINNING UNLESS THE MANUAL SAYS SO.

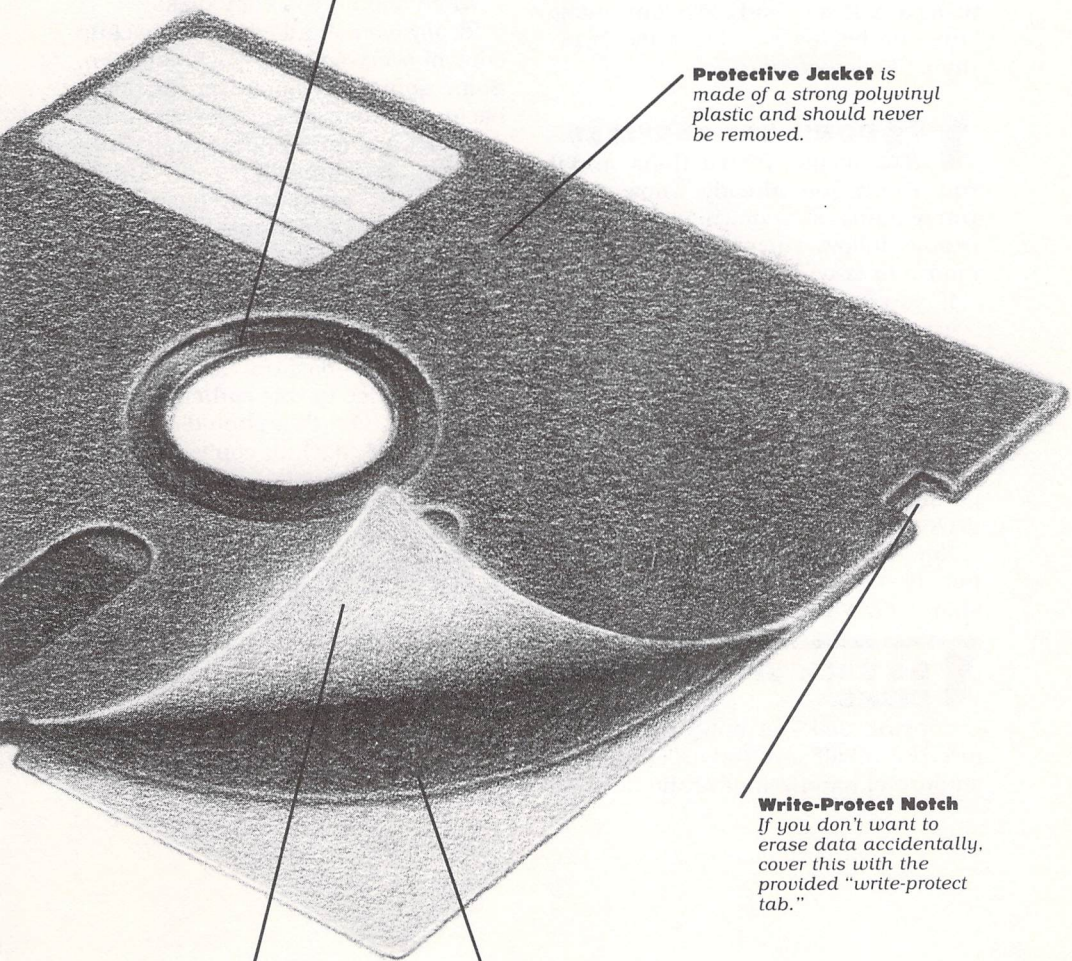
On most computers, this is a good way to scramble your data unmercifully. (One exception is the Kaypro, whose disk drives always spin.) Pay attention to that disk-drive warning light.

On many computers—Apple and IBM are two major exceptions—power should never be turned on or off with disks in the drive.

10 DON'T MAIL OR TRANSPORT YOUR DISKS WITHOUT PROTECTING THEM.

If a picture is worth a thousand words, your disk may be worth tens of thousands of words. Before mailing it, package it as you would the finest photograph—so it can't be bent or folded by the United States Postal Service or any other carrier. Protect the disk on both sides with rigid, corrugated cardboard.

When planning to carry or ship disks by plane, mark them so they are kept away from X-ray machines, which generate a variety of stray magnetic fields.



Hub Ring *protects disk against constant wearing by disk-drive spindle.*

Protective Jacket *is made of a strong polyvinyl plastic and should never be removed.*

Write-Protect Notch *If you don't want to erase data accidentally, cover this with the provided "write-protect tab."*

Inner Lining *is specially lubricated and designed to remove dust from disk's surface.*

Magnetic Disk *is made of Mylar, covered with an amazingly thin layer of metal oxide—1/30 the width of a human hair.*

11 DON'T ALLOW UNQUALIFIED INDIVIDUALS TO HANDLE YOUR DISKS.

The people most likely to treat your disks right are the people who paid for them and depend on them—you, and those people in your family trained to use them. Make sure your children know and follow the rules of disk care. If you lend disks out, make sure the borrower is both trustworthy and competent.

12 DON'T GET CARELESS.

Follow instructions, and if you think you already know what you're doing, slow down a little. Many people follow rules carefully for a month or two, and then get sloppy.

If you're sure you won't want to "write over" a disk's contents, cover the small notch in the upper right-hand corner of your disk with one of the black or silver "write-protect tabs" that come with your box of disks. (Hint: Don't substitute cellophane tape—most recently made disk drives will ignore it.)

Now that you know all the things not to do, here's something you should do without fail:

1 DO BACK UP YOUR DISKS.

Copying disks is nobody's idea of fun, but it will save you an enormous amount of handwringing should your original become damaged.

It's easier to copy disks if you own two drives, but if you have only one, there is software which reduces the number of times you have to reinsert each disk. *Locksmith*, for Apple Computers from Alpha Logic Systems ($99.95), can copy a disk in eight seconds. Similar disk-copy programs are available for some other computers.

When should you copy disks?

Ideally, you should own one backup copy of every software disk you own. Some software companies include a backup in their price; others will sell you backups for a charge that varies widely, but ordinarily is only a fraction of the original purchase price. Others allow you to make your own copy.

If you work extensively with data disks for programs such as word processors or data bases, you should make a daily backup. (More people pay lip service to this rather than actually do it. But they should.) Be sure to mark disk backup copies with the date they were made, so you can keep track of which is most current.

It's a good idea to inspect disks occasionally. Look over the surface that can be seen through the head-access hole. (Don't move the disk around to see more.) Very shiny wide rings and scratches are indications of potential problems.

Check the round hole at the center of the disk; if it shows deterioration, make or buy a backup immediately.

Better Safe Than Sorry...

HOW TO PROTECT YOUR COMPUTER INVESTMENT

BY JANE WOLLMAN

The culprit might have been Scooter or Streaker or Trigger—or any of the six pet cats owned by Susan and Douglas Hemming of Pasadena. California. Nobody knows just who was responsible. The fact is, nevertheless, that one of their furry little friends had suddenly turned the couple's computer software container into a kitty litter box. Upon opening the plastic case—which had perforations around the handle—Douglas discovered that $300 worth of disks were thoroughly soaked.

He tried washing the programs in warm water, allowing them to dry for almost a month. The disks worked for a little while, but then started to deteriorate one by one. Everything—the word-processing program, the computer games, a complete supply of blank disks—was ruined.

Fortunately, all that damage did not spell disaster for the Hemmings, who had had all foresight to take out special insurance protecting against loss or destruction of their four home computers and mushrooming software collection. This meant that the insurance company would pay them nearly the full replacement cost of the entire cost of the entire box of spoiled disks.

Most standard homeowners and apartment-tenants insurance policies—protecting your house and personal property—include coverage for computer systems and software in the event of loss caused by certain perils, such as fire, theft, and vandalism. But coverage is limited. Computer claim-settlement payments are low. In addition, because of the computer's particular vulnerabilities, protection under these plans usually is far from adequate. For example, a homeowners contract typically fails to cover damage resulting from power surges—fluctuations in the electrical line sometimes triggered by lightning or brownouts—which can destroy computer components and damage software. They also often ignore accidental damage—stemming from, say, your child's tripping on a cord and toppling over the computer; and loss generated by pets—such as the Hemmings' catastrophe.

Most conventional homeowners policies also fail to cover the contents of a software disk—whether the program is store-bought or developed by you from scratch. All that is insured is the physical medium on which the instructions are recorded. Furthermore, a computer purchased for operating a home-based business isn't protected, since no equipment used for this purpose is covered in the customary homeowners plan. And while some policies do provide coverage for a computer employed for incidental business applications or for occasional moonlighting, many homeowners contracts make no provision at all for computers used to perform business functions.

NEW POLICIES

Recently, several insurance companies have brought out special policies, as well as extensions (called endorsements) to homeowners plans, that address the unique nature of computers as household property. They also provide for higher settlement payments if a loss occurs. In contrast, traditional endorsements—commonly called "floaters"—which are purchased to boost coverage on items such as furs or jewelry, usually are unavailable for home computers and, when they are, may carry high premiums. But the homeowners computer endorsements, typically available through local insurance agents, sometimes can be tacked on at no extra cost; in other cases, a small addition to the annual premium is required.

Some companies, such as State Farm Fire and Casualty Co., now offer specific computer coverage, at no additional charge, as an optional endorsement to their regular homeowners policy. As with most of the new plans protecting computers, claim settlement is made on a more liberal "replacement cost" basis—the amount necessary to replace your computer with a new machine of similar functions and capabilities. This can be much preferable to a "cash value" basis, common in homeowners policies, where payment is set according to the amount your computer is worth at the time of loss—i.e., replacement cost minus depreciation.

Other companies are giving special consideration automatically to computers *within* the standard homeowners policy, as well. If an income tax program you've developed is destroyed, the company will likely reimburse you with an amount equal to the price of a similar piece of software available commercially. Some insurers, however, allow for a more generous negotiated settlement based on your time and skill in producing the program.

WHAT CAN GO WRONG?

Another way some of the new provisions broaden protection against the unexpected is by providing "all risk" coverage: You're insured for *any* peril (including fire, theft, and accidental breakage) *except* those—such as wear and tear, insects, and earthquakes—specified in the policy.

ESPECIALLY FOR COMPUTERS

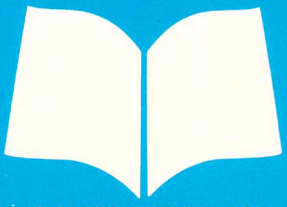
Perhaps the most revolutionary move in home computer insurance is the development of low-cost policies designed solely for systems and software. This means you can acquire broad computer coverage without having to take out a homeowners or tenants contract, which often is an expensive investment. The policies range widely in cost—generally starting at about $200 a year.

Most of the new computer insurance now available automatically protects equipment you may acquire after signing up for coverage. Should you, however, need heavier insurance at a later date, even some of the "no-cost" policy endorsements include provisions for increased coverage. Beyond that, if you're in business, perhaps, and require broader coverage, you can always take out a commercial policy, which usually is more expensive.

Another point you might keep in mind when considering insurance is whether the policy of endorsement has a settlement-deductible clause, and what that fee is.

Even when you're protected by the proper computer insurance, some preventive measures are well-worth taking to avoid potential problems and aggravation. For one, be sure to make backup, or duplicate, copies of your software. If they are particularly valuable, store the clones in a bank safe-deposit box. Another smart move is to buy a power-surge protector—fitted between the computer plug and your wall socket—which is designed to safeguard the computer and software against damage from sudden fluctuations on the power line.

Clearly, the bigger your computer system, the more attention you should give to insuring it. An increasing number of insurance companies plan to introduce special provisions. So check with your local agent to see what coverage is available. Don't delay purchasing insurance. Because when it comes to your home computer, why take chances?



SCHOLASTIC INC.